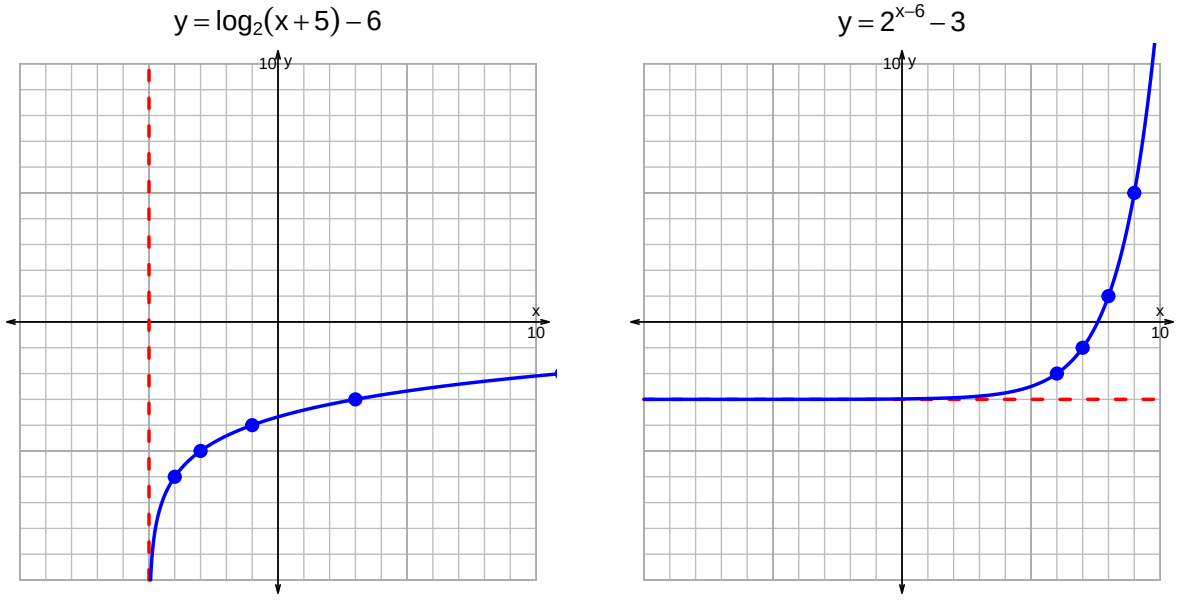
Name: Date:

s18quiz: EXP LOG (Solution v122)

1. Graph $y = \log_2(x+5) - 6$ and $y = 2^{x-6} - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-5}{4}\right) \cdot 2^{3t/7}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{19 \cdot 4}{5} = 2^{3t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 4}{5}\right) = \frac{3t}{7}$$

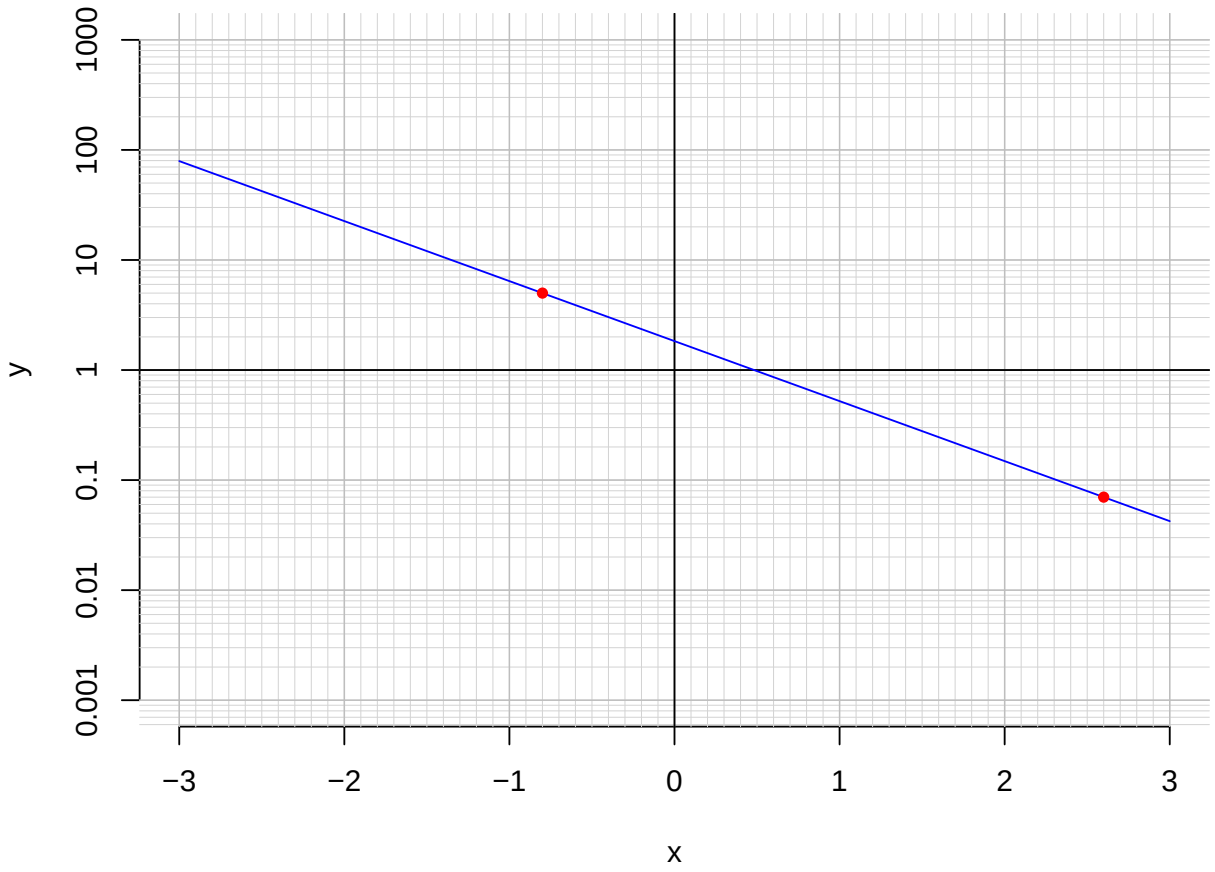
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_2\left(\frac{19 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_2\left(\frac{19 \cdot 4}{5}\right)$$

3. An exponential function $f(x) = 1.83 \cdot e^{-1.26x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.6)$.

$$f(2.6) = 0.07$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.26} \cdot \ln\left(\frac{x}{1.83}\right)$$

c. Using the plot above, evaluate $f^{-1}(5)$.

$$f^{-1}(5) = -0.8$$